Rational Choice, Agency and Thoughtfully Reflective Decision Making: The Short and Long-Term Consequences of Making Good Choices

Author(s): Ray Paternoster and Greg Pogarsky

Source: *Journal of Quantitative Criminology*, June 2009, Vol. 25, No. 2 (June 2009), pp. 103-127

Published by: Springer

Stable URL: https://www.jstor.org/stable/23367582



J Quant Criminol (2009) 25:103–127
DOI 10.1007/s10940-009-9065-y

ORIGINAL PAPER

# Rational Choice, Agency and Thoughtfully Reflective Decision Making: The Short and Long-Term Consequences of Making Good Choices

**Ray Paternoster · Greg Pogarsky**

Published online: 10 March 2009


**Abstract** Notions of human agency are a prominent part of some but not all criminological theories. For example, McCarthy (Annu Rev Sociol 28:417–442, 2002) argues that rational choice theory, which allows persons great involvement in decision making, is more congenial with notions of human agency than others. It would appear from his argument that rational choice theory offers fertile ground to develop a clearly defined role for human agency in criminal behavior. In this paper we have taken up McCarthy's view and argue that an important part of what is human agency consists of thoughtfully reflective decision making. We outline four elements of thoughtfully reflective decision making, and claim that it is a characteristic that varies both across persons and within persons over time. It is in short the process by which good decisions are made because by using this process one increases the likelihood that choices made will be consistent with preferences. We develop a clear operational definition of thoughtfully reflective decision making and link it to the concept of human agency. We also articulate testable hypotheses about the short-term and longer-term implications of thoughtfully reflective decision making. We conclude with a discussion of what we think lies ahead for future conceptual and empirical work.

**Keywords** Deterrence · Rational choice · Agency · Decision making · Add Health

## Introduction

In a recent article McCarthy (2002) laid the foundation for a rational choice theory of offending and the implications that such a theory would have for criminology. There are at least two important points in his paper that bear further discussion. The first was that rational

R. Paternoster
Department of Criminology & Criminal Justice, Maryland Population Research Center, College Park, MD, USA

G. Pogarsky (✉)
School of Criminal Justice, University at Albany, Albany, NY, USA
e-mail: pogarsky@albany.edu

offending behavior implied that more often than not offenders make the decision to commit a crime based on a consideration of the costs and benefits of both crime and non-crime, that this required the collection of information about those costs and benefits, and a weighing of the costs/benefits before making a decision. The essence of a rational choice perspective on crime is that offenders make a choice to commit a crime and making that choice involves all of the same cognitive processes as a choice to engage in non-criminal behavior.

McCarthy also noted (2002: 422) that to say that human beings compile and weigh information about the choices they make before making them does not mean that this contemplation is always or completely reasoned, thoughtful or utility maximizing (Simon 1957, 1984) nor is it to say that everyone is equally adept at such choice making. An implication of this is that there is likely to be variation across persons (as well as over time and across situations) in how carefully, thoroughly, or thoughtfully choices and decisions are made. On average, some persons are better than others at collecting information or collecting more or better information, they are more careful in weighing the costs and benefits, more thoughtful in considering the information gathered, and more likely to ask themselves later if they could have made a better decision. The implication we explore is that those who are better decision makers on average make better life choices and have more successful short-term and long-term life outcomes than those who are less skilled at making good choices.

The second important point made by McCarthy was that this view of a reasoning decision maker who makes choices grants persons more human agency than most criminological theories. Notions of human agency are prominent in many recent criminological theories in addition to rational choice (Nagin 2007). For example, theories of criminal desistance appeal to the fact that many offenders take an active role in deciding to quit crime and the process of desistance is in varying degrees a product of their intentional actions as human agents (Giordano et al. 2002; Giordano et al. 2007; Laub and Sampson 2003; Maruna 2001). Although less pronounced, images of a choice making and agentic criminal actor are also seen in various degrees in social control, social learning, and routine activities theory. While criminal offenders as active human agents have a role in these theories, it is not clear what is meant by agency, what things people do that reveals their agency, or how we would even recognize someone acting as agent. While there has been much written, both favorable and unfavorable, in other fields about what human agency is and what its characteristics are (Archer 2000; Bandura 1989, 2001; Emirbayer and Mische 1998; Fuchs 2001; Hitlin and Elder 2007), for the most part criminologists have been content to simply posit that agency is some vague indicator of human will that serves as a counterweight to determinative structural factors.

In this paper we link these two themes raised by McCarthy of rational choice and human agency with the notion of thoughtfully reflective decision making (TRMD).[1] TRDM refers to the tendency of persons to collect information relevant to a problem or decision they

[1] The idea that there is an individual-level attribute that captures differences in the process through which decisions are made and life is approached is certainly not new. There is an abundant literature in philosophy, psychology, and sociology about good or competent decision making (Baron 2008; Byrnes 1998, 2002; Rescher 2003). Clausen (1991, 1993) describes planful competence as self-knowledge about one's abilities and interests and how to take advantage of them, and the self-confidence to undertake such action. The three components of planful competence are dependability, intellectual involvement, and self-confidence. Those who are planfully competent are predicted to have more favorable long-term life outcomes such as stable work careers and more successful marriages. Langer (1989) describes mindfulness as the ability to think openly and creatively about problems and how to solve them. Its opposite, mindlessness, is characterized by rigid thinking and an inability to think out of context. Like planful competence, those possessing mindfulness are predicted to make better decisions and enjoy a wealth of better short- and long-term life

must make, to think deliberately, carefully, and thoughtfully about possible solutions to the problem, apply reason to the examination of alternative solutions, and reflect back upon both the process and the outcome of the choice in order to assess what went right and what went wrong. It is thoughtful decision making because persons who have these characteristics are deliberate, careful, and mindful in how they go about collecting and using information about a problem/issue they are confronted with. It is reflective because individuals can step out of themselves and examine how well they have made a decision and learn from it. TRDM, then, describes the process of good decision making.

To be perfectly clear at the outset, we think persons are rational when they make choices that are consistent with their preferences and goals. When persons deliberately and intentionally seek to realize their preferences they are also acting with agency. In other words, persons acting with human agency make choices and enforce these choices on the world. They do not, therefore simply respond to the roles and institutions they are involved in, but create those roles and institutions, thereby enforcing their will. We also believe TRDM is an important concept because good decision makers are more likely to be successful in both the short- and long-term. If, as we hypothesize, TRDM is an effective way to make decisions, then it should predict short- and long-term measures of success or favorable life outcomes (Byrnes 2002). We think TRDM is part of what it means to be a rational person and is therefore an integral part of any rational choice theory of offending, as well as a useful concept in understanding human agency. In linking good decision making, offenders who make choices, and human agency we are in basic agreement with Nagin (2007: 262) that "By agency, I mean a decision making process, however crude or faulty, that reflects the benefits, costs, and risks of alternative courses of action".

We view TRDM as an individual-level attribute that varies both across persons and within-individuals over time; it also varies across the context within which a decision is made. Since TRDM is a heavily cognitive trait, differences across persons reflect a combination of biological capacity such as constitutional differences in intelligence and executive functioning (Moffitt 1990; Morgan and Lilienfeld 2000) and social-structural characteristics such as social class and parent's human capital (Becker 1993). It differs within-persons over time because there is ample evidence that crucial brain centers for executive functioning (pre-frontal cortex) mature slowly and may not reach full maturity until the late 20s or early 30s (Gogtay et al. 2004; Steinberg 2005). A maturing of the brain areas responsible for executive functioning may lead to an improvement over the lifespan in TRDM by decreasing the discount rate—the rate at which people discount the future (Bishai 2004; Green et al. 1994; Read and Read 2004). Finally, TRDM varies over the context in which decisions are made. Not every choice involves the same amount of information collection, the deliberative weighing of alternative courses of action and a revisiting of the decision in order to examine how well or poorly it was made. In fact, it would be difficult to imagine a world in which every, or even most, decisions are made only after careful and thoughtful deliberation of the possible consequences of our actions.

Footnote 1 continued
outcomes. What we have called thoughtfully reflective decision making is different than both planful competence and mindfulness. Competence is based more upon one's abilities and capacities such as intelligence, confidence, and punctuality while mindfulness refers more to the ability to think creatively or "out of the box"—the ability to see novel solutions. TRDM, though cognitive, is not determined by intelligence but is more multidimensional, including as it does a complex of abilities and traits such as emotional maturity, and motivation. Those who make thoughtfully reflective decisions, then, combine several personal competencies as well as the ability to reconcile emotions, competing situational and motivational demands that may interfere with good decision making (see Byrnes et al. 1999; Byrnes 2002).

Many behavioral decisions are made with no or only modest cognitive work. These decisions that involve little in the way of reasoned reflection are made on the basis of intuition (Kahneman 2003), habit (Camic 1986), emotions (Turner and Stets 2005), or one's moral beliefs (Etzioni 1988).

Kahneman (2003), for example, has described a theory of cognitive decision making that consists of two systems. At the first level decisions are made on the basis of intuition with little reasoning, effort, or monitoring and are heavily subject to the influence of emotions. The decisions made with intuition are sometimes poor because they involve little effort and reason[2] but sometimes can be very accurate as when a chess master effortlessly plays five or more matches at once. Kahneman further notes (2003: 1451) that the cognitive process characterized by intuition is "governed by habit", subject to decision making heuristics, and is easy and quick. The second decision making system Kahneman characterizes as involving "reasoning" and unlike intuition is slow, deliberate, and most of all effortful. Decisions made by reason are also more likely to be strictly monitored for quality than are swifter intuitively made choices. Careful monitoring of one's decisions adds effort to those made by reason. We would deduce from this that TRDM is a type of competent decision-making skill that will increase the probability of good choices—choices that are consistent with preferences. In helping people make choices that are consistent with their preferences, TRDM also helps them to be better agents.

In this paper we present more than a conceptual and theoretical account of thoughtful decision making and agency. We think that discussions of human agency have been too long divorced from the empirical world. We, therefore, offer both a conceptual and operational definition of what we mean by TRDM and, therefore, one element of human agency. TRDM allows persons to be better agents by providing them with the capacity to make good decisions, good because choices converge with preferences. If what we argue about this kind of thoughtful and deliberative thinking is true, it should relate to both criminal and conventional behaviors. More specifically, more thoughtfully reflective decision makers should be more effective agents and should make better quality decisions (Keckes 1976; Baron 2008). This should be manifested in more successful life outcomes, the accumulation of social, personal, and cultural capital, and a reduced risk of anti-social and self-destructive behavior. As Byrnes (2002: 215) put it, "there should be a close correspondence between competent decision making and personal success". Using data from the National Longitudinal Study of Adolescent Health ("Add Health") we examine whether TRDM is related to both short- and more long-term favorable and self-destructive outcomes. A measure of TRDM is obtained at the first wave of the Add Health data collection when youth were between the ages of 12 and 19 (mean and median age of 16 years) while outcome measures are taken from waves 2, which occurred 6–18 months

[2] For example, what is the answer to the following question. "A bat and a ball cost $1.10 in total. The bat costs $1 more than the ball. How much does the ball cost?" (Kahneman 2003: 1450). An intuitive answer would be 10¢ because it is easy to think that a dollar more than that is the desired total cost of $1.00, but it would be wrong because if the bat costs $1 more than the ball then the bat must cost $1.10, and the total cost would be $1.20 while the total must be $1.10. The correct answer is 5¢ for the ball and $1.05 for the bat. Most of us might immediately say the ball costs 10¢ on the basis of quick intuition, but if asked to give careful thought to the problem before answering we would likely come up with the correct answer.

following wave 1, and wave 3, some five and one-half to 7 years later (mean and median age of 22 years).[3]

## Rational Choice, Thoughtful Reflection, and Agency

### Rational Choice

Rational choice theory has been a fixture of thinking about crime since at least the mid-1980s (Cornish and Clarke 1986), though the historical origins date back to Becker's (1968) economic approach to crime. Perhaps one of the best recent discussions of the rational choice view of criminal behavior is by McCarthy (2002). McCarthy reviews nearly 40 years of theorizing and empirical research on the rational choice model of offending, much of it within the past twenty, and plumbs its distinctive features and implications. He offers a succinct yet what we think is an accurate characterization of its defining features (2002: 422):

> The rational choice approach to crime assumes that crime can be understood as if people choose to offend by using the same principles of cost-benefit analysis they use when selecting legal behaviors... Thus, the decision to offend is influenced by people's preferences, their attitudes toward risk and time discounting, and their estimates of an illegal opportunity's availability, costs, and benefits versus a legitimate opportunity's availability, costs, and potential for realizing the same or comparable returns.

While many criminological theories (social control, strain) attempt to explain the origin of criminal (strain) or non-criminal (social control) preferences, rational choice theory takes preferences as given and tries to explain how preferences affect decisions to offend, not offend, or desist from offending. Further, more than most criminological theories, rational choice focuses on offenders as decision makers who make choices (Nagin 2007).

We can abstract from this some conceptual foundation for what it means to act as a rational or reasoned choice-maker (See Baron 2008; Carroll and Johnson 1990; Rescher 2003). Following McCarthy (2002), to act rationally means to act is a way that one's choices are harmonious with their preferences. Rational action occurs when persons adopt choice-making processes that best ensure the match between preferences and choices. The philosopher John Keckes (1976: 168) put it as follows: "the justification of rationality is ... [as] a device for problem-solving and it should be employed because everybody has problems, because it is in everybody's interest to solve his problems, and because rationality is the most promising way of doing so". To make choices on the basis of reason, rationality, or intelligence is to: (1) recognize that there are alternatives to attaining some goal, and that one must collect information about these alternatives and what the costs and benefits are to each, (2) consider and compare the costs and benefits of these alternatives, (3) make a decision as to which alternative one is going to choose based on that consideration, and (4) revisit that decision later to see if it could have been improved. This process of making thoughtful and reasoned choices is discussed in Aristotle's *Nicomachean Ethics* as *bouleusis* or practical deliberation—deliberation or rational pondering that one undergoes before deciding what to do (Hoffe and Salazar 2003). The best guarantee of making a good choice, then, involves reasoned deliberation, what we here call thoughtful reflection, which entails the four elements discussed above.

[3] Although we argue that TRDM varies across the life course we cannot directly test this hypothesis. In the Add Health data, measures of TRDM are only now available at the first wave. In a cross-section, however, TRDM does vary monotonically with age.

## Thoughtful Reflection

The first step in the process of making a rational choice is recognizing that there are alternatives to a desired goal. Once we have identified our alternative courses of action, we then gather information about each choice. There is, of course, variation in how completely we gather information about these alternative courses of action, and the process of collecting information is itself a cost, but rational actors do some amount of work in thinking about what the costs and benefits are about each alternative course of action they are contemplating. When this information is gathered we then begin the process of thinking about and weighing these alternatives—the process of deliberation. Each alternative we have identified as a possible course of action has its benefits, which is why we are considering it, but it also has it costs, disadvantages and dangers which is why we are considering alternatives. Just as information gathering, this process of deliberation may be long or it may be quite brief and cursory (Simon 1957, 1984), and deliberation like information gathering is a cost to be considered.

Some amount of deliberation over alternative courses of action is nevertheless an indispensable part of the reasoned choice-making process (Baron 2008). After the process of deliberation is completed the outcome is likely an ordered evaluation of the alternatives and one makes a choice as to what to do on that basis. More specifically, one makes a choice among the alternatives with the intention that the chosen alternative or means will bring about the desired or anticipated outcome or end better or easier than the unselected alternatives. The choice among alternatives, then, is an act of deliberate choice, or what Aristotle called *proairesis*. It is a course of action undertaken with the intention and expectation that it will have the intended consequence and will secure what one wants. The choice of one alternative over another is made on the basis of the thoughtful deliberation over alternative courses of action that one has just performed and not, for example, a response to the roles or institutional demands one is located in or on the basis of a coin flip.

Once the choice of one course of action over others is made, the process of reasoned choice-making is not over. A person acting with thoughtful reflection also engages in self-regulation. They carefully examine and monitor their information gathering, deliberation and consideration of alternatives, and their final choice and take corrective action if necessary. Thoughtful persons take a critical stance toward their deliberative process and ask if it could have been improved or made more efficient, less costly or time consuming. In other words, they learn, and lessons learned are applied in subsequent deliberative processes. An example of the way in which decisions are revisited is the kind of Bayesian updating of risk assessment that persons seem to undergo with respect to criminal offending and sanction threats. Matsueda et al. (2006) and Lochner (2007) have recently shown that the perceived certainty of arrest or being questioned by the police is updated in response to new information from one's own experiences with behavior and arrest and the experiences of one's peers [See also the research in deterrence on the experiential effect (Paternoster et al. 1983) and on resetting (Pogarsky et al. 2004; Pogarsky and Piquero 2003)].

The process of making a good choice, then, is a multi-step process that we characterize as thoughtfully reflective decision making. TRDM, we argue, is good choice-making in that it most likely results in choices being consistent with preferences (Baron 2008; Byrnes 1998; Rescher 2003). While all persons are capable of TRDM, there is across-person variability in the capacity to make decisions in this manner, differences that have short- and long-term consequences. That specific issue is the subject of this paper. There is also within-person variation over time in TRDM, and variation in how decisions are made in

different contexts. Finally, if TRDM is related to delinquent outcomes along the lines we suggest, we would expect that offenders with different offense trajectories would have different choice-making capacities or styles (Piquero and Moffitt 2005). All of these latter issues are important but must remain for now the subject of future research. In the next section we take some pains to differentiate TRDM from a theoretical construct that has dominated the discipline for nearly two decades now—self control. After establishing the integrity of TRDM, in the following section we will link this process of making decisions to the concept of agency, arguing that an important component of acting with agency is making thoughtfully reflective decisions.

*Is not TRDM Just Self-Control?*

It seems that after 1990 anyone conceptualizing a notion of offender decision making or reasoning had to confront the criticism that they are simply describing self-control (Gottfredson and Hirschi 1990). While we acknowledge that there is some overlap between what we are calling TRDM and self-control, for a number of reasons they are not the same theoretical construct. First, TRDM describes a process through which an individual makes choices, and therefore has a much more restricted conceptual boundary than self-control. As originally described by Gottfredson and Hirschi (1990: 87–91), self-control was a multi-dimensional trait consisting of such things as low cognitive and academic skills, a desire for easy and immediate gratification, a preference for physical rather than mental activity, enjoyment of thrilling and exiting rather than activities, a lack of perseverance, being ill-tempered, and self-centered.

This difference in the conceptual terrain covered by self-control vs. TRDM is vividly seen in how self-control has been operationalized. When researchers have gone about measuring self-control they have more often than not used multi-trait attitudinal measures such as the "Grasmick 24 item self-control scale" (Grasmick et al. 1993; Pratt and Francis Cullen 2000) which includes indicators of the following concepts: impulsivity, simple tasks, risk seeking, physical activities, self-centered, and temper. Alternatively, behavioral indicators of self-control have been used such as not wearing a seat belt (Keane et al. 1993); risky/erratic driving (Junger et al. 2001), or having an alias or false identity (DiLisi 2001). There is no published study in the existing literature that has used the process of making a decision or making a choice among alternative courses of action by the respondent as a measure of self-control.[4]

It might be granted that while TRDM is conceptually and empirically different from the very broad notion of self-control reflected in Gottfredson and Hirschi's original statement of the concept in their 1990 book, it is indistinguishable from the more narrow conceptualization offered by Hirschi (2004) and re-expressed by Gottfredson (2006). This more restricted version states that low self-control is the inability of persons to consider the full temporal range of the consequences of their actions. This re-conceptualized notion of self-control captures the cumulative effects of ignoring the consequences, both short- and long-term, of one's actions. In a sense it is a variety scale of negative consequences. When Hirschi (2004) operationalized this new version of self-control it consisted of such things as not liking school, thinking good grades are unimportant, not doing homework, smoking, being unsupervised by and emotionally distant from parents. A comparable scale of cumulative negative consequences have been used in other tests of this new, arguably more restricted, version of self-control (Piquero and Bouffard 2007). Important for our concern

[4] For one exception see McGloin and Shermer (2009).

is that this new conceptual understanding of self-control and its corresponding operational definitions do not implicate the process of decision making which is at the heart of TRDM.

Second, and even if we adopt what seems to be a more conceptually restricted understanding of self-control which has been recently advanced by Hirschi (2004), TRDM is much more dynamic and alterable than self-control because it can vary within-persons over time and across different choice-making contexts. Gottfredson and Hirschi (1990) have argued that the relative level of self-control is fixed approximately by age 10 and that there is very little that other institutions can do to improve it once it has failed to become established. It is, after all, a time-stable individual trait. One afflicted with low self-control or criminality remains afflicted throughout life relative to one with better self-control, which is why they place heavy weight on the role of opportunity (crime rather than criminality) in desisting from crime over the life course. Their argument (1990: 137) is that self-control does not really change that much over time while crime does, and it is the decline in opportunity that accounts for the lion's share of desistance: "It follows that the frequency with which individuals participate in criminal events may vary over time and place without implying change in their self control... Seen in the light of this distinction, those concerned with maturational reform appear to confuse change in crime (which declines) with change in the tendency to commit crime (which may not change at all)...The age theory asserts that crime, independent of criminality, declines with age". In contrast, TRDM both in relative and absolute terms can improve over the life course both in response to the deliberate teaching of how to make better decisions (Thaler and Sunstein 2008) and through the developmental maturity of executive functioning in the brain (Gogtay et al. 2004).

We do argue that persons can typically make decisions, particularly important ones, being thoughtfully reflective and reasoned so that they can be rank ordered with respect to how much they generally rely on TRDM rather than intuition in making decisions. We do not mean by this, however, that even someone who is generally high in TRDM makes all of their decisions only after a thoughtful and deliberate process. Indeed, even among generally thoughtful persons many decisions may be made reflectively or impulsively as in deciding where to eat on the basis of the closest restaurant (immediate gratification), other decisions may be made on the basis of habit (what route to take to work), or emotional urges [whether or not to take time to use a condom while in "the heat of the moment" (Loewenstein 1996)]. While persons can generally be described as being thoughtfully reflective, that ability is manifested differently in somewhat different situations. Self-control, it seems, describes a more consistent pattern of behavior that is less varying over context. Someone who is ill tempered at home is likely to have a short-fuse at work on the highway or in the grocery store, one who does not think of the consequences of their actions in their personal life are not likely to think of long-term costs in their professional life. Low self-control drives a pattern of behavior so complete and comprehensive that it reaches into all aspects of life, predicting crime, obesity, accidents, sexual promiscuity, gambling, drug addiction, unemployment, and poor saving habits to name only a few. Low self-control, then, is not a process of decision making or a way in which choices over alternative courses of action are made, indeed one low in self-control may be completely unaware that alternatives exist.

Another difference between TRDM and self-control is in the causal mechanisms linking each to criminal behavior. Although we cannot develop the causal argument fully here, we think that the effect of TRDM on criminal conduct is largely if not entirely indirect. For example, those who generally make good decisions are more likely to see opportunities, investments, and resources in their lives and as a result will accumulate greater human,

social and cultural capital (Coleman 1988; DiMaggio 1982), and those with greater capital will be less likely to commit crimes and more likely to be conventionally successful. In contrast, the effect of low self-control on crime is mainly direct. Those low in self-control will be attracted to any and all activities that provide intensive thrills, require little effort, and result in immediate gratification such as crime and the other "analogous" behaviors. The relationship between low self-control and its many manifestations is not generally mediated by other causal mechanisms.

Finally, the measure we have here of TRDM is empirically distinct from self-control. We have a measure that captures some of the meaning behind the redefined notion of self-control discussed in Hirschi's 2004 paper and Piquero and Bouffard's 2007 article. Recall that conceptually this redefined notion of self-control characterizes low self-control as the inability to consider the full range of the consequences of one's actions. The measure of self-control we use from the Add Health data is worded as follows: "When making decisions, you usually go with your 'gut feeling' without thinking too much about the consequences of each alternative". While we would not argue that this one item encapsulates all or perhaps even most of what Gottfredson and Hirschi might mean by their redefined self-control, it certainly is generally faithful to a general sense of what they are implying.

We would expect this measure of low self-control to be inversely correlated somewhat with TRDM (hence, some conceptual overlap), and it is. The correlation between low self-control and each of the four indicators of TRDM, however, is quite low, never greater than −.11. The lowest inter-item correlation among the TRDM items, on the contrary, is .39. In a five-item factor analysis two factors were extracted. The four items measuring TRDM all loaded on the same factor and have factor loadings of .58 or greater. The self-control item loaded −.11 on the first factor and .16 on the second. When the self-control item is excluded from the factor analysis, only one factor is extracted and all TRDM items have a factor loading of .58 or greater. Further, the reliability coefficient is .75 with the one self-control item excluded and .62 with it included. Collectively, these findings all consistently point in the same direction—that TRDM is conceptually and empirically distinct from self-control.

## Human Agency

The importance of what we mean by TRDM stems from our view that human agency is revealed at least in part through thoughtful reflection and deliberative action. Agency is not to us "will" or personal freedom, nor is it merely human volition. It is an intentional activity directed toward some goal. More specifically, this goal may be immediate as in whether or not to quit smoking cigarettes, or it may be more distant, as in deciding whether to continue committing crimes or to desist. Whether in pursuit of long-term or short-term goals, one acts with human agency when they are intentionally acting on the world for some end. If rationality is making choices consistent with preferences, then agency is intentionally doing things in the world to make that consistency come about.

One of the most important means for doing this is to make good decisions, where we now mean good in a normative sense. A good decision is one made on the basis of thoughtful consideration of alternatives; it is a competent decision made on the basis of reason and intelligence (Byrnes 2002; Keckes 1976; Baron 2008). TRDM, then, occurs when persons act as reasoning agents to pursue goals in the short- and long-term, reflecting what Hitlin and Elder (2007) describe as the temporal notion of agency. Thoughtful decision making about smoking or not smoking is an example of what they call "pragmatic

agency" while decision making about our long-term commitment to crime vs. desistance and a conventional life reflects what they call "life course agency". Though there undoubtedly are different types and dimensions of agency, TRDM is implicated in all of them to the extent that the act of agency involves choice and deliberate action linking choices with preferences.

When a person acts with agency, then, they are enforcing their will on the world, or in the words of Coleman (1986: 1312) acting purposively where "[a]ctions are 'caused' by their (anticipated) consequences". These consequences can be mundane and immediate or long-term and profound. In either case the action is initiated by the person or agent and the action is deliberately performed because it is expected to result in the anticipated consequence. Thoughtfully reflective action is a vehicle of human agency because the kind of cognitive activity we have described as thoughtful reflection involves the kind of choice making that will most likely be successful in bringing about the intended consequence.

Our notion of agency as involving thoughtfully reflective behavior is harmonious with previous conceptualizations as to what human agency involves. Citing Aristotle with respect to practical wisdom, Emirbayer and Mische (1998:994–1002) argue that an important dimension of agency is "practical evaluation". With respect to decisions about what course of action to take, practical evaluation refers to the careful consideration of alternatives or what they refer to as "deliberation over possible trajectories of action, in which actors consider alternative hypothetical scenarios by critically evaluating the consequences of implementing these within real-world situations" (Emirbayer and Mische 1998: 997–998). In very similar language, Bandura (1989, 2001) describes four components of human agency: (1) intentionality, (2) forethought, (3) self-reactiveness, and (4) self-reflectiveness.

Central to most understandings of agency is the notion that it "refers to acts done intentionally" (Bandura 2001: 6). If I walk into a room and trip over a rug, my tripping is not an act of agency if I did not intend it. It would be if I wanted to get my child who was in the room to laugh and I expected that if I did trip he would chuckle a bit. To intend something is not, however, to simply expect or anticipate that some wanted outcome will occur, but refers to a proactive commitment on the part of an actor to bring about that desired outcome. I thought about what it would take to get my child to laugh, saw the rug with the curled up corner, walked toward it, and deliberately tripped over it in order to provoke a laugh in my child. In wanting to trip over the rug for the given purpose of making my child laugh, I am acting with agency.

In forethought we cull together possible lines of action that we think are likely to produce the consequence that we want. In other words, we create in our minds alternative courses of action and anticipate the likely consequences of those actions. Some of these actions we anticipate will not result in the outcome that we desire, others will. Upon consideration some of these outcomes are more likely to result in our desired outcomes, or are less costly means to the end. Forethought, then, is the creation of alternative courses of action in our minds and a consideration of what outcomes those courses of action would bring about. Forethought, then, requires us to project our actions into the future and consider the likely consequences of these actions, and this future could be short-term, as in the reaction I will get from my child if I were to trip over the rug in the next few minutes or stick my tongue out at him, or more long-term, as in what my income possibilities would be if I were to major in English literature as opposed to political science. If I then determine that a laugh is best gotten by tripping, I take that action and if I decide that I can

make more money with an English literature degree, then I decide to take that action. In both cases I am acting with agency, whereas if I trip accidentally, I am not.[5]

It is not enough to act with intention, nor to have forethought and develop alternative plans of action: to have agency requires that persons self-regulate or monitor their actions. This self-regulation is described as self-reactiveness and self-reflectiveness by Bandura. By being self-reactive, persons both motivate and evaluate their conduct to ensure that it meets personal standards. More important for our concerns, self-reflectiveness concerns the "verification of the soundness of one's thinking" (Bandura 2001: 10). As described, agency is an on-going process whereby a selected course of action is monitored, with the possibility of self-corrective action, to ensure it is goal directed, and examined as to how adequate one's original process of deliberation was.

Human agency, then, is reflected in the fact that persons intentionally initiate an action in the service of some outcome or consequence they wish to bring about. Before the action is taken or a choice made, alternative courses of action that could produce the desired or intended outcome are considered, information about the likely consequences is collected, and after some deliberation and consideration a course of action is selected or a choice made and action taken. Both the action taken and the process of deliberation which produced the action are monitored as persons consider if their actions are in fact moving them toward the goal and if their thinking and deliberation has been sound.

The notion of reasoned and thoughtfully deliberate decision making is critical in rescuing human agency from the "subjectivist ghetto" (Emirbayer and Mische 1998: 991) in that it has an empirical referent. On this point, Lilly et al. (2006: 362) emphasize that "unless human agency can be operationalized, scholars cannot test empirically whether this is an important causal factor that explains variation in offending or merely reflects self-serving or distorted memories relayed by old criminals about their past lives in crime." Our position is that what we call TRDM consists of making good choices, that it is the most effective way to make choices consistent with preferences, and that it reflects what it means to act with agency. As mentioned, TRDM is a characteristic that varies across persons in that some are better at it than others, it varies across time in that as actors mature through adolescence into adulthood they become more thoughtfully reflective decision makers, and it varies across contexts in that some actions are based on intuition and others on habit, emotions, or moral considerations. In this paper we are concerned only with some of the behavioral consequences of "good" choice making and hypothesize that between-individual variation in TRDM should be related to both proximal and distal life outcomes.

Using data from the National Longitudinal Study of Adolescent Health ("Add Health") we have four measures that capture what we mean by thoughtfully reflective decision making:

1. collecting information pertaining to a problem that requires a decision.
2. thinking of alternative solutions to the problem.
3. systematically deliberating over how to determine which alternative might be best.
4. retrospectively analyzing how good a problem solver one was in the situation.

We then relate this measure of TRDM to both favorable and self-destructive outcomes over both a short- and long-term time period. In the next section of this paper we discuss the data we have employed, the measures of key variables, and our analytic strategy.

[5] An implication of this would be that unintended acts cannot be said to be the product of agency. When Laub and Sampson (2003), for example, refer to "desistance by default"—quitting crime without deliberating intending to or without one's awareness—this is not by our understanding acting with agency.

## Methods

### Data

Data were analyzed from The National Longitudinal Study of Adolescent Health ("Add Health"), a multi-wave, panel study of adolescents who were in grades 7–12 at the onset of the study in 1994. The Add Health sample was constructed by first selecting 132 high schools and middle schools. The selection of schools was stratified to assure sufficient representation on size, school type, geographic region, urbanization, and racial composition. The selection probability was proportional to the size of the school. All students enrolled in grades 7–12 in the selected schools were eligible to complete a brief in-school questionnaire during the 1994–95 school year. A stratified random sample of these students was selected for a more extensive in-home interview in 1995 (wave 1). A caretaker of the respondent (usually the mother) was also interviewed at wave 1. Most respondents completed a wave 2 in-home interview 6–18 months later. Many of these respondents also completed a wave 3 interview some 5–7 years after wave 1.

This study concerns both the more immediate and distant correlates of TRDM during adolescence. As well, we examined the predictive capacity of reflective decision-making for both delinquency outcomes and non-delinquent but consequential life outcomes. Outcomes were analyzed from both the wave 2 and wave 3 interviews. The core analysis sample consists of 7,812 respondents who: were interviewed at waves 1, 2, and 3, had non-missing data for all study variables including sample weights, and who were 12–19 years old at wave 1.[6] The mean and median age of respondents was 16 at wave 1 and 22 at wave 3. The sample is 54% female; it is 70% White, 21% Black, 2% Native American, and 7% Asian.

### Measures

The appendix details the coding of variables and Table 1 provides summary measures for the variables, which are described next.

Delinquent Outcomes at Waves 2 and 3

To start, we created an omnibus variety score measure of general delinquency. At wave 3, respondents reported the number of times in the past 12 months they: damaged property, stole something worth more than $50, went into a house or building to steal something, used or threatened to use a weapon, sold marijuana or some other drug, stole something worth less than $50, and hurt someone badly in a fight. Responses to individual items were dichotomized and summed to create a variety scale ranging from 0 to 7 that indicated the number of these different offenses respondents reported having committed in the 12 months preceding wave 3. Identical scales were created for waves 2 and 1, the latter to include as a lagged predictor in later multivariate models.

Two other delinquency outcomes were examined. Since each targets a specific form of delinquency, a variety scale was unnecessary. At wave 3, respondents reported the number of days in the past 12 months they drank five or more drinks in a row, and had been drunk or very high on alcohol. Each question was answered on a 7-point scale ranging from

[6] This third criterion excluded 12 additional respondents who were either 11, 20, or 21 years old at wave 1. These respondents were not age-normative for grades 7–12.

**Table 1** Summary measures of study variables

| Variables | Range | Median, mean, standard deviation |
|---|---|---|
| *Wave 3* | | |
| General delinquency | 0–7 | 0, .37, .86 |
| Heavy drinking | 0–12 | 1, 2.37, 2.83 |
| Illegal drug use | 0–15.08 | 0, .56, 1.29 |
| College | 0–1 | 0, .36, .48 |
| Community participation | 0–1 | 0, .31, .46 |
| Civic participation | 0–1 | 0, .44, .50 |
| *Wave 2* | | |
| General delinquency | 0–7 | 0, .53, 1.05 |
| Heavy drinking | 0–12 | 0, 1.25, 2.44 |
| Illegal drug use | 0–15.56 | 0, .66, 1.54 |
| Smoking | 0–30 | 0, 4.76, 9.97 |
| College aspirations | 0–4 | 0, .57, 1.04 |
| *Wave 1* | | |
| Thoughtfully reflective decision-making | 4–20 | 9, 8.77, 2.50 |
| Age at wave 1 | 12–19 | 15.76, 15.66, 1.51 |
| Male | 0–1 | 0, .46, .50 |
| White | 0–1 | 1, .70, .46 |
| Black | 0–1 | 0, .21, .41 |
| Native American | 0–1 | 0, .02, .14 |
| Asian | 0–1 | 0, .07, .26 |
| General delinquency | 0–7 | 0, .74, 1.20 |
| Heavy drinking | 0–12 | 0, 1.00, 2.13 |
| Illegal drug use | 0–18.67 | 0, .68, 1.69 |
| Smoking | 0–30 | 0, 3.51, 8.70 |
| College aspirations | 0–4 | 0, .50, .97 |
| Low self-control | 1–5 | 3, 2.96, 1.12 |
| Perceived neighborhood | 0–4 | 0, .84, 1.04 |
| Parental education | 0–1 | 1, .60, .49 |
| Parental expectations | 1–5 | 3, 3.64, 1.40 |
| Parent cares | 1–5 | 5, 4.87, .45 |
| Public assistance | 0–1 | 0, .18, .39 |
| Hanging out | 0–3 | 2, 1.95, 1.00 |

*Notes*: The appendix details the coding of variables; $n = 7{,}812$

"never" to "every day or almost every day." The two responses were summed to create an index ranging from 0 to 14 on which higher values reflected heavier drinking. Identical scales were created for waves 2 and 1.

Another delinquency outcome measured illegal drug use. At wave 3, respondents reported the number of times in the past 30 days they used: (1) marijuana, (2) cocaine, and (3) any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills, without a doctor's prescription. The answers to each of these three

questions were first logged,[7] and then summed. This generated a scale on which higher values reflected more illegal drug use. Identical scales were created for waves 2 and 1, except that the reference period for wave 2 was "since month of last interview" and for wave 1 it was "ever."

Finally, we examined cigarette smoking at wave 2. For this measure, respondents reported the number of days out of the past 30 that they smoked at least one cigarette. An identical measure was created for wave 1. This outcome was not assessed 5–7 years later at wave 3 because, by then, respondents were at least 18 years old and we did not consider cigarette smoking an indicia of delinquency for adults.

*Non-Delinquent Outcomes at Waves 2 and 3*

The study also examined several positive early life outcomes and conventional, prosocial attachments. For this portion of this analysis we attempted to select life outcomes that are critical to success and positive adjustment. The first of these identified the 36% of respondents who either received a bachelor's degree or were enrolled in college at wave 3. To complement this measure, we also examined respondents' desire at wave 2 to attend college on a five-point scale from 0 = high to 4 = low (an identical measure was also used from wave 1). Another indicator of successful development is involvement in the community where one lives. To capture community participation, a variable was created that identified the 31% of respondents who reported performing some unpaid volunteer or community service work in the 12 months preceding wave 3. To capture civic participation, a variable was constructed identifying the 44% of respondents who reported that they voted in the presidential election immediately preceding wave 3. For all respondents, this was the November 7, 2000 election.[8]

*Thoughtfully Reflective Decision-Making*

Thoughtfully reflective decision-making was measured with an index consisting of the responses to four statements: (1) When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible; (2) When you are attempting to find a solution to a problem, you usually try to think of as many different approaches to the problem as possible; (3) When making decisions, you generally use a systematic method for judging and comparing alternatives; (4) After carrying out a solution to a problem, you usually try to analyze what went right and what went wrong. Respondents reported their level of agreement with each statement on a five-point Likert scale from 1 = strongly agree to 5 = strongly disagree. The four responses were summed to generate an index ranging from 4 to 20 on which higher values indicated less reflective decision-making.

*Self-Control*

We chose a measure of self-control based on Hirschi's (2004) redefinition of self control as the tendency to consider the full range of consequences from one's acts. Thus, self-control was measured by the level of agreement on a five-point scale from "strongly disagree" to "strongly agree" with the following statement: "When making decisions, you usually go with your 'gut feeling' without thinking too much about the consequences of each alternative."

[7] One was added to each response so that the distribution began at one rather zero, and all values had a defined natural log.

[8] All respondents in the core sample were of voting age (at least 18 years old) on that date.

*Remaining Control Variables*

The ensuing models control for various respondent characteristics and other known correlates of problematic life outcomes. Respondent characteristics include age, sex, and ethnicity. Later analyses also included a measure of respondents' perceptions about their neighborhood. Respondents gave binary (1 = yes/0 = no) responses to each of four questions: whether they knew most of the people in their neighborhood, stopped on the street to talk with someone who lives in their neighborhood, people in their neighborhood look out for each other, and they feel safe in their neighborhood. The responses were summed to create a scale ranging from 0 to 4. A measure was also included identifying the 60% of respondents whose primary caretaker graduated from high school. The analyses also control for the primary caretaker's level of disappointment on a 5 point scale should the respondent not graduate from college. A measure was included of how close the respondent felt to their primary caretaker. This item was measured on a 5-point ordinal scale ranging from "not at all" to "very much." A variable was also included identifying the 11% of respondents whose primary caretakers indicated they received at least one of the following forms of public assistance during the month preceding the wave 1 interview: social security or railroad retirement, supplemental security income (SSI), Aid to Families with Dependent Children (AFDC), food stamps, unemployment or worker's compensation, or some form of housing subsidy. Finally, later analyses include a measure of the degree to which the respondents reported that they "hung out with friends." Answers were provided on a 4-point Likert scale (from "not at all" to "5 or more times").

## Results

Table 2 presents condensed results for eleven separate regressions. For each model, the table reports an exponentiated standardized regression coefficient for reflective decision making, a *P*-value for the null hypothesis that the coefficient is zero, and McFadden's $R^2$.[9] Tables 3 and 4 present expanded versions of these results; they include regression coefficients and *p*-values for all control variables.

The three binary outcomes were modeled with Logistic regression. These outcomes are whether respondents who had either graduated from or were enrolled in college by wave 3, whether respondents did volunteer work in the 12 months preceding wave 3, and whether respondents voted in the November 7, 2000 Presidential election. The remaining outcomes were modeled with Negative Binomial regression. The standardized, exponentiated regression coefficients permit the comparison of effect sizes both within and across models. The Logit coefficients imply that a standard deviation increase in the corresponding predictor increases the odds of the binary outcome by a factor of Exp[$\beta$]. The Negative Binomial coefficients imply that a standard deviation increase in the corresponding predictor increases the outcome by a factor of Exp[$\beta$]. Recall that each estimated coefficient for reflective decision-making is net of the control variables described earlier. In appropriate cases (particularly for the delinquency outcomes), the models include lagged outcomes from wave 1 to capture any remaining heterogeneity in the propensity to commit the modeled behaviors. Beyond this, all models include school fixed effects to control for unmeasured factors related to schools that may affect the outcomes. All models use sample weights and estimate robust standard errors to address the potential clustering of observations within schools.

[9] This is calculated as 1−LL(model)/LL(null model) in a non-survey-adjusted model specification.

**Table 2** The predictive capacity of TRDM: consolidated results

| Outcome | Wave 2 outcomes | | | Wave 3 outcomes | | |
|---|---|---|---|---|---|---|
| | $\beta^{a}_{TRDM}$ | $P$-value[b] | Psuedo $R^{2c}$ | $\beta^{a}_{TRDM}$ | $P$-value[b] | Psuedo $R^{2c}$ |
| *Negative binomial regressions* | | | | | | |
| General delinquency | 1.11 | .00 | .11 | 1.07 | .04 | .03 |
| Heavy drinking | 1.08 | .01 | .06 | 1.07 | .01 | .03 |
| Illegal drug use[d] | 1.07 | .05 | .12 | 1.10 | .00 | .03 |
| Smoking | 1.07 | .10 | .04 | | | |
| College aspirations | 1.06 | .03 | .04 | | | |
| *Logistic regressions* | | | | | | |
| College | | | | .93 | .05 | .16 |
| Community participation | | | | .89 | .00 | .05 |
| Civic participation | | | | .93 | .03 | .03 |

*Notes*: $n = 7{,}812$

[a] $\beta_{TRDM}$ denotes the standardized, exponentiated regression coefficient for reflective decision-making; the control variables included in each model appear in Tables 3 and 4

[b] 2-tailed test of $H_0$: $\beta_{TRDM} = 0$

[c] McFadden's $R^2$, which is 1−ll(model)/ll(null) in a non-survey adjusted model specification

[d] Wave 2 model controls for natural log of the number of days between waves 1 and 2 to account for exposure time since reference period for this outcome is "since month of last interview"

Several findings emerge. First and foremost, less thoughtfully reflective decision-making at wave 1, between ages 12 and 19, predicts various proximal and distal outcomes. All significant associations were in the theorized direction. Respondents who were less reflective at wave 1 committed more criminal and risky behaviors at wave 2. Such respondents also had significantly lower college aspirations. Not surprisingly then, by wave 3, less reflective respondents were significantly less likely to be enrolled in or have graduated from college. As well, such respondents had fewer conventional and prosocial attachments, as evidenced by their lower community and civic participation rates as young adults (ages 19–26). Finally, respondents who were less reflective at wave 1 remained significantly more likely to be involved in delinquency, heavy drinking, and illegal drug use at wave 3. All told, reflective decision-making is negatively related to a host of proximal and distal life outcomes in accordance with our earlier theoretical discussion.

These associations are not insubstantial. For example, $\text{Exp}[\beta] = 1.11$ for the association between reflective decision and general delinquency at wave 2. This implies that a standard deviation less reflective decision making at wave 1—an approximate difference between the 75th and 25th percentile—translates to a 11% increase in general delinquency prior to wave 2. This is net of the range of control variables discussed earlier, including an identical variety score for general delinquency prior to wave 1 and school level fixed effects. A standard deviation less reflective decision making at wave 1 was also associated with a 6% lower value on the college aspiration scale. The findings on school-related variables at wave 2 coincide with those on whether, by wave 3, respondents had either graduated from or were enrolled in college. The Logit coefficient $\text{Exp}[\beta] = .93$ implies that a standard deviation less TRDM (recall that higher values mean less reflective decision-making) reduces the odds of college graduation by 7%. Finally, a standard deviation less reflective

**Table 3** Negative binomial regressions of wave 2 outcomes against TRDM

| Variables | General delinquency | Heavy drinking | Illegal drugs[a] | Smoking | College aspirations |
|---|---|---|---|---|---|
| TRDM | 1.11** (.03) | 1.08** (.03) | 1.07* (.04) | 1.07 (.05) | 1.06* (.03) |
| Male | 1.17** (.05) | 1.07 (.04) | .97 (.04) | .98 (.05) | 1.10** (.03) |
| W1 General delinquency | 1.83** (.04) | | | | |
| W1 Heavy drinking | | 2.04** (.07) | | | |
| W1 Illegal drug use | | | 2.44** (.13) | | |
| W1 Smoking | | | | 2.32** (.10) | |
| W1 College aspirations | | | | | 1.77** (.04) |
| Low self-control | 1.02 (.03) | 1.12** (.04) | 1.12** (.04) | 1.22** (.07) | 1.13** (.03) |
| Perceived neighborhood | .98 (.02) | .93* (.03) | 1.00 (.03) | 1.06 (.05) | 1.01 (.03) |
| Parental education | 1.03 (.03) | 1.06 (.04) | 1.05 (.04) | 1.07 (.05) | 1.03 (.03) |
| Parental expectations | 1.01 (.03) | 1.02 (.03) | 1.00 (.03) | .92* (.04) | .82** (.02) |
| Parent cares | .98 (.03) | .92* (.03) | .98 (.03) | .92* (.03) | .98 (.02) |
| Public assistance | .99 (.03) | 1.01 (.04) | 1.02 (.04) | 1.08 (.05) | 1.09** (.03) |
| Hanging out | 1.13** (.04) | 1.23** (.05) | 1.34** (.05) | 1.36** (.07) | 1.07* (.03) |
| McFadden's $R^{2b}$ | .11 | .06 | .12 | .04 | .04 |

*Notes*: Cells report standardized, exponentiated regression coefficients with standard errors in parentheses; each model controls for ethnicity of respondent and includes school fixed effects; *P*-value is for 2-tailed $H_0$: b=0; *n*=7,812; * $P<.05$; ** $P<.01$

[a] Model controls for natural log of the number of days between waves 1 and 2 to account for exposure time since reference period for this outcome is "since month of last interview"

[b] Calculated as 1−ll(model)/ll(null) in a non-survey adjusted model specification

decision-making at wave 1 translates to 11% less community and 7% less civic participation at wave 3 as well.

Tables 3 and 4 include standardized, exponentiated regression coefficients for the remaining control variables.[10] Consistent with past research, the delinquency outcomes are most strongly related to past delinquency and gender. The effects of past delinquency, heavy drinking, and drug use are particularly strong between waves 1 and 2. For example, $\text{Exp}[\beta] = 1.83$ for general delinquency at wave 1 in the model of general delinquency at wave 2. Although these relationships hold for the wave 3 outcomes, the magnitudes tend to be half or smaller than for the wave 2 outcomes. This is not surprising because while the time between wave 1 and 2 is 12–18 months, 5–7 years elapsed between waves 1 and 3. This latter, lengthier time period may provide more opportunity for "turning points" or other forms of reformation, or simply "aging out" from crime. Also consistent with past research, males transgress at far higher rates than females do. This is particularly true for the wave 3 outcomes; $\text{Exp}[\beta\text{male}] = 1.63$, 1.27, and 1.33 for the wave 3 models of general delinquency, heavy drinking, and illegal drug use, respectively. Although the impacts of reflective decision-making are not as large as for these two reliable predictors of delinquency and related outcomes, the predictive capacity of reflective decision making exceeds or is commensurate with that of poverty, neighborhood perceptions, parental expectations, parental education, and closeness to parents at wave 1.

[10] Except that coefficients for ethnicity and the school fixed effects were omitted to conserve space.

**Table 4** Regressions of wave 3 outcomes against TRDM

| Variables | Negative binomial regressions | | | Logit regressions | | |
|---|---|---|---|---|---|---|
| | General delinquency | Heavy drinking | Illegal drugs[a] | College | Community participation | Civic participation |
| TRDM | 1.07* (.04) | 1.07** (.02) | 1.10** (.04) | .93* (.03) | .89** (.03) | .93* (.03) |
| Male | 1.63** (.06) | 1.27** (.02) | 1.33** (.05) | .87** (.03) | .97 (.03) | 1.03 (.03) |
| W1 delinquency | 1.44** (.05) | | | | | |
| W1 Heavy drinking | | 1.16** (.02) | | | | |
| W1 Illegal drug use | | | 1.46** (.04) | | | |
| Low self-control | 1.04 (.04) | 1.02 (.02) | 1.07* (.04) | .74** (.03) | .86** (.03) | .88** (.03) |
| Perceived neighborhood | .95 (.04) | .97 (.02) | .94 (.04) | 1.00 (.04) | .91* (.03) | .96 (.03) |
| Parental education | .96 (.03) | 1.00 (.02) | .97 (.04) | .77** (.03) | .85** (.03) | .93* (.03) |
| Parental expectations | 1.02 (.04) | 1.05* (.02) | .96 (.03) | 1.44** (.06) | 1.20** (.05) | 1.12** (.04) |
| Parent cares | 1.00 (.03) | 1.02 (.02) | .99 (.03) | 1.13* (.07) | 1.11* (.05) | 1.08* (.04) |
| Public assistance | .97 (.04) | .94** (.02) | 1.00 (.04) | .68** (.03) | .80** (.03) | .82** (.03) |
| Hanging out | 1.03 (.03) | 1.07** (.02) | 1.10* (.04) | .94 (.03) | .93* (.03) | 1.00 (.03) |
| McFadden's $R^{2b}$ | .06 | .03 | .03 | .16 | .05 | .03 |

*Notes*: Cells report standardized, exponentiated regression coefficients with standard errors in parentheses; each model controls for ethnicity of respondent and includes school fixed effects; *P*-value is for 2-tailed $H_0$: b=0; $n$=7,812; * $P<.05$; ** $P<.01$

[a] Model controls for natural log of the number of days between waves 1 and 2 to account for exposure time since reference period for this outcome is "since month of last interview"

[b] Calculated as 1−ll(model)/ll(null) in a non-survey adjusted model specification

Importantly, reflective decision-making at wave 1 is comparably predictive of both the wave 2 and wave 3 delinquency outcomes. This supports our earlier exposition of both proximal and distal correlates of less reflective decision-making at early ages. Although Exp[$\beta$] for less reflective decision making diminishes for general delinquency from 1.11 to 1.07 between wave 2 and 3, the coefficient increases from 1.07 to 1.10 for illegal drug use between waves 2 and 3. For heavy drinking, the effect size is about the same (1.08 vs. 1.07) between waves 2 and 3. The apparently persistent risk of disadvantage related to less reflective decision making at young, critical ages is consistent with various theoretical mechanisms. Certainly, cursory and impetuous decisions can create an immediate risk of transgression. But the consequences from a single transgression—such as involvement in the criminal justice process, adverse impacts from a record of this, potential antisocial associations, and interrupted prosocial capital development—all potentially contribute to persistent risk of antisocial involvements and other adverse outcomes in the later life course.

## Discussion

In this paper we have taken the first steps in what we think is an important project for criminologists—clearly specifying what we take to be a critical element of human agency, TRDM, linking it within a broad theoretical position, rational choice theory, and

operationalizing it in a manner that allows us to investigate its empirical implications. Our claim is that an important part of what it means to act rationally and with agency is the process of thoughtfully reflective decision making. We act as agents when we intentionally pursue goals and deliberately commit ourselves to a course of action designed to reach those goals. We have identified what we think are four key components of TRDM: (1) collecting information pertaining to a problem that requires a decision, (2) thinking of alternative solutions to the problem, (3) systematically deliberating over how to determine which alternative might be best, and (4) retrospectively analyzing how good a problem solver one was in the situation.

We think that TRDM is a characteristic of individuals that varies both across persons, within persons over time, and across different decision making contexts. We are clear that not all decision making involves calculation and reasoning and that a great deal of the decisions we make in life involve intuition, habit, emotional and moral factors. While it is too early for us to specify what kinds of decisions are subject to reasoning and deliberation over alternatives, we do imply that some decisions are made like this and that on average some people are better at being thoughtfully reflective than others.

We then hypothesized that TRDM is an effective means of making choices consistent with preferences and that if so there are some clear predictions that can be made. We hypothesized that if TRDM is a good way to make decisions then it ought to be positively related to successful life outcomes and inversely related to unsuccessful outcomes, both in the short- and long-term. We tested this hypothesis on a sample of adolescents from the "Add Health" data and found general support for our conjectures. Adolescents who were more thoughtfully reflective in their decision making were more likely to have favorable life outcomes both in the short-term (6–18 months later) and more long-term (5–7 years later) than those less thoughtful. More specifically, in the short-term those who were more thoughtfully reflective were less likely to be involved in delinquency, heavy drinking, and drug use and more likely to expect to graduate from college. In the long-term those who were more thoughtful in their decision making were less likely to be involved in criminal offending and drug use and more likely to be involved in community and civic groups.

The worth of our initial effort lies in moving discussions about human agency away from vague assertions about "will" and "volition", what Emirbayer and Mische (1998: 991) aptly describe as a "subjectivist ghetto", to attempting to operationalize its key components and generate some testable predictions on what it means to act with agency. While some may disagree with our indicators, we think they are both reasonable and faithful to previous theoretical and conceptual understandings about human agency in the social science literature. Our measure also has some empirical weight since between-individual differences on this measure are manifested in both short- and long-term positive and negative life consequences. We readily acknowledge, however, that our operationalization is only one possibility and we welcome other efforts to provide empirical referents to notions of human agency. Additional conceptual work is also clearly in order. There are likely other components to human agency than simply TRDM, although we here argue it is an important dimension. Further empirical work is in order as well. We have suggested that TRDM improves over the life course, which if true it would naturally be implicated in the process of desisting from crime. We also think agency is implicated in one's personal identity both current and future (Archer 2000; Hitlin and Elder 2007) in ways that have not been developed. The existence of "possible selves" (Markus and Nurius 1986, 1987) points to a cognitive vision of who we would like to become in the future and a blueprint or roadmap to get attain that desired self. Thoughtfully reflective decision making in moving toward a

possible self or intentional self-change (Kiecolt 1994) is an important component of agency: "agency at the level of the person can be defined as the ability to formulate and pursue life plans" (Shannahan and Elder 2002: 147). It has also been argued (Piquero and Moffitt 2005) that offenders with different offense trajectories should have different decision making styles with some being more reasoned and other more intuitive in their choice making.

While we have found that TRDM is related to both life-success and anti-social outcomes, we do not know if all components are equally implicated in these outcomes. TRDM is comprised of four components and it is possible that only some are important in making successful decisions. Related to this is the issue of whether or not one can be taught how to make better decisions and whether deliberate interventions would be related to better subsequent decision making. Empirical work in behavioral economics (Thaler and Sunstein 2008), psychology (Plous 1993; Byrnes 1998; Byrnes et al. 1999) and cognitive behavioral theory (Ramsay and Rostain 2008) has suggested that people can in fact learn to make better decisions, particularly though feedback or what we have here called reflection. We have also suggested that TRDM can be affected by individual traits such as impulsivity or emotional states, and these individual level factors may impact different components of TRDM differently. Impulsivity, for example, may lead one to forego the difficult search for alternatives and jump at the first option considered. Strong emotional states may narrow one's vision to only one goal or lead to a mismatch between how one thinks one will behave in an emotionally "hot" state while in an emotionally "cool" state (Loewenstein 1996). There is already a great deal of important work being done by cognitive psychologists and behavioral economists on the relationship between emotions and decision making (Vohs et al. 2007). It is time for criminologists to examine how these factors may impact anti-social behavior (Nagin 2007). We would also note that an important line for subsequent work is in understanding the processes that produce TRDM. We have alluded to the fact that in part it is dependent upon the biological maturing of the brain, particularly the pre-frontal cortex. This is not the entire story, however, since good decision making is a skill that can be taught. While we can only speculate, it is likely related to proficiency with logic, and the ability to draw inferences. To further separate TRDM from self-control, we have no a priori reason to expect that the development of good decision making occurs as a normal part of the socialization process. Finally, we also think an important line for future work is mapping the intervening causal mechanism linking TRDM to successful and unsuccessful life outcomes. We have hinted in this paper that TRDM can lead to the accumulation of personal, social, and cultural capital in a way previously theorized by Nagin and Paternoster (1994). We hope the first few steps that we have taken with our paper serves as encouragement to others to further pursue what we think is an important, long overdue, and devilishly vexing line of work.

**Acknowledgement** We would like to thank Bill McCarthy, Jean McGloin, Alex Piquero and the anonymous reviewers for carefully reading the paper and offering many, many helpful suggestions. This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). No direct support was received from grant P01-HD31921 for this analysis.

## Appendix 1

See Table 5.

**Table 5** Description and coding of variables

| Variable | Waves measured | | | Description |
|---|---|---|---|---|
| | W1 | W2 | W3 | |
| General delinquency | X<br>$\alpha = .67$ | X<br>$\alpha = .68$ | X<br>$\alpha = .63$ | # times in past 12 months respondent: damaged property, stole something worth more than $50, went into a house or building to steal something, used or threatened to use a weapon, sold marijuana or some other drug, stole something worth less than $50, and hurt someone badly in a fight. Responses were dichotomized at never/at least once and then summed to create a variety scale. |
| Heavy drinking | X | X | X | # days in the past 12 months respondents drank five or more drinks in a row, and had been drunk or very high on alcohol. Answers were on a 7-point Likert scale ranging from "never" to "every day or almost every day." The two responses were summed to create an index on which higher values reflected heavier drinking. |
| Illegal drug use | X<br>$\alpha = .41$ | X<br>$\alpha = .46$ | X<br>$\alpha = .56$ | # of times respondents used: (1) marijuana, (2) cocaine, and (3) any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills, without doctor prescription. Answers were logged (add 1 to eliminate zeros) and then summed. Reference periods are: Wave 3-past 30 days, Wave 2-month of last interview, and Wave 1-ever. |
| Smoking | X | X | | # days out of the past 30 that respondent smoked cigarettes. |
| College aspirations | X | X | | Desire to attend college on a 5-point scale from 0 = high to 4 = low. |
| College graduate | | | X | 1 if respondent received a bachelors degree (BA, AB, or BS); 0 otherwise. |
| Community participation | | | X | 1 if respondent did unpaid volunteer or community service work in the past 12 months; 0 otherwise. |
| Civic participation | | | X | 1 if respondent voted in the November 7, 2000 presidential election; 0 otherwise. |

**Table 5** continued

| Variable | Waves measured | | | Description |
|---|---|---|---|---|
| | W1 | W2 | W3 | |
| TRDM | X<br>$\alpha = .75$ | | | Summed responses to four statements: (1) When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible, (2) When you are attempting to find a solution to a problem, you usually try to think of as many different approaches to the problem as possible, (3) When making decisions, you generally use a systematic method for judging and comparing alternatives, (4) After carrying out a solution to a problem, you usually try to analyze what went right and what went wrong. Each answer on 5-point scale from "strongly agree" to "strongly disagree." Responses were summed; higher values reflected less planful deliberation. |
| Age | X | | | Respondent's age in years |
| Male | X | | | 1 if male; 0 if female. |
| White | X | | | 1 if White; 0 otherwise. |
| Black | X | | | 1 if Black; 0 otherwise. |
| Native American | X | | | 1 if Native American; 0 otherwise. |
| Asian | X | | | 1 if Asian; 0 otherwise. |
| Low self-control | X | | | Respondent's level of agreement from "strongly disagree" to "strongly agree" with the following statement: When making decisions, you usually go with your "gut feeling" without thinking too much about the consequences of each alternative. |
| Perceived neighborhood | X | | | Respondents reported whether they knew most of the people in their neighborhood, stopped on the street to talk with someone who lives in their neighborhood, people in their neighborhood look out for each other, and they feel safe in their neighborhood. The four dichotomous responses were summed. |
| Parental education | X | | | 1 if primary caretaker graduated from high school; 0 otherwise |
| Parental expectations | X | | | Primary caretaker's disappointment on a 5-point scale if respondent did not graduate from college. |

**Table 5** continued

| Variable | Waves measured | | | Description |
|---|---|---|---|---|
| | W1 | W2 | W3 | |
| Parent cares | X | | | How much primary caretaker cares about respondent; five responses from "not at all" to "very much." |
| Public assistance | X | | | 1 if family received at least one of following forms of public assistance during the month before wave 1 (and 0 otherwise): Social security or railroad retirement, supplemental security income (SSI), Aid to Families with Dependent Children (AFDC), food stamps, unemployment or worker's compensation, or a housing subsidy. |
| Hanging out | X | | | # times in past week hung out with friends: 0 = none; 1 = 1 or 2 times; 2 = 3 or 4 times; 3 = >4 times. |

## References


Archer MS (2000) Being human: the problem of agency. Cambridge University Press, Cambridge, UK

Bandura A (1989) Human agency in social cognitive theory. Am Psychol 44:1175–1184

Bandura A (2001) Social cognition theory: an agentic perspective. Annu Rev Psychol 52:1–26

Baron J (2008) Thinking and deciding, 4th edn. Cambridge University Press, New York

Becker GS (1968) Crime and punishment: an economic approach. J Polit Econ 76:169–217

Becker GS (1993) Human capital: a theoretical and empirical analysis with special reference to education, 3rd edn. University of Chicago Press, Chicago

Bishai DM (2004) Does time preference change with age? J Popul Econ 17:583–602

Byrnes JP (1998) The nature and development of decision making: a self-regulation model. Lawrence Erlbaum, Mahwah, NJ

Byrnes JP (2002) The development of decision making. J Adolesc Health 31:208–215

Byrnes JP, Miller DC, Reynolds M (1999) Learning to make good decisions: a self-regulation perspective. Child Dev 70:1121–1140

Camic C (1986) The matter of habit. Am J Sociol 91:1039–1087

Carroll JS, Johnson EJ (1990) Decision research: a field guide. Sage Publications, Newbury Park, CA

Clausen JA (1991) Adolescent competence and the shaping of the life course. Am J Sociol 96:805–842

Clausen JA (1993) American lives: looking back at children of the great depression. Free Press, New York

Coleman JS (1986) Social theory, social research, and a theory of action. Am J Sociol 91:1309–1335

Coleman JS (1988) Social capital in the creation of human capital. Am J Sociol 94:S95–S120

Cornish DB, Clarke RV (1986) The reasoning criminal: rational choice perspectives on offending. Springer-Verlag, New York

DiLisi M (2001) It's all in the record: assessing self-control theory with an offender sample. Crim Just Rev 26:1–16

DiMaggio P (1982) Cultural capital and school success: the impact of status culture participation on the grades of U.S. high school students. Am Sociol Rev 47:189–201

Emirbayer M, Mische A (1998) What is agency? Am J Sociol 103:962–1023

Etzioni A (1988) The moral dimension: toward a new economics. Free Press, New York

Fuchs S (2001) Beyond agency. Sociol Theor 19:24–40

Giordano PC, Cernkovich SA, Rudolph JL (2002) Gender, crime, and desistance: toward a theory of cognitive transformation. Am J Sociol 107:990–1064

Giordano PC, Cernkovich SA, Schroeder RD (2007) Emotions and crime over the life course: a neo-Median perspective on criminal continuity and change. Am J Sociol 112:1603–1661

Gogtay N, Giedd JN, Lusk L, Hayashi KM, Greenstein D, Vaituzis AC, Nugent TF, Herman DH, Clasen LS, Toga AW, Rapoport JL, Thompson PM (2004) Dynamic mapping of human cortical development during childhood through early adulthood. Proc Natl Acad Sci 101:8174–8179

Gottfredson M, Hirschi T (1990) A general theory of crime. Stanford University Press, Stanford, CA

Gottfredson MR (2006) The empirical status of control theory in criminology. In: Cullen FT, Wright JP, Blevins KR (eds) Taking stock: the status of criminological theory. Transaction, New Brunswick, NJ, pp 77–100

Grasmick HG, Tittle CR, Bursik RJ Jr (1993) Testing the core empirical implications of Gottfredson and Hirschi's general theory of crime. J Res Crime Delinq 30:5–29

Green L, Fry AF, Myerson J (1994) Discounting of delayed rewards: a life-span comparison. Psychol Sci 5:33–36

Hirschi T (2004) Self-control and crime. In: Baumeister RF, Vohs KD (eds) Handbook of self-regulation: research, theory and applications. Guilford Press, New York, pp 537–552

Hitlin S, Elder GH Jr (2007) Time, self, and the curiously abstract concept of agency. Sociol Theory 25:170–191

Hoffe O, Salazar C (2003) Aristotle. SUNY Press, Albany, NY

Junger M, West R, Timman R (2001) Crime and risky behavior in traffic: an example of cross-situational consistency. J Res Crime Delinq 38:439–459

Kahneman D (2003) Maps for bounded rationality: psychology for behavioral economics. Am Econ Rev 93:1449–1475

Keane C, Maxim P, Teevan J (1993) Drinking and driving, self-control, and gender: testing a general theory of crime. J Res Crime Delinq 30:30–46

Keckes J (1976) A justification of rationality. State University of New York Press, Albany

Kiecolt KJ (1994) Stress and the decision to change oneself: a theoretical model. Soc Psychol Q 57:49–63

Langer EJ (1989) Mindfulness. Addison-Wesley, Reading, MA

Laub JH, Sampson RJ (2003) Shared beginnings, divergent lives: delinquent boys to age 70. Harvard University Press, Cambridge
Lilly RJ, Cullen FT, Ball RA (2006) Criminological theory. Sage, Thousand Oaks, CA
Lochner L (2007) Individual perceptions of the criminal justice system. Am Econ Rev 97:444–460
Loewenstein G (1996) Out of control: visceral influences on behavior. Organ Behav Hum Decis Process 65:272–292
Markus H, Nurius P (1986) Possible selves: the interface between motivation and the self-concept. In: Yardley K, Honess T (eds) Self and identity: psychological perspectives. Wiley, New York
Markus H, Nurius P (1987) Possible selves. Am Psychol 41:954–969
Maruna S (2001) Making good: how ex-convicts reform and rebuild their lives. Washington, DC, American Psychological Association
Matsueda R, Kreager DA, Huizinga D (2006) Deterring delinquents: a rational choice model of theft and violence. Am Sociol Rev 71:95–122
McCarthy B (2002) New economics of sociological criminology. Annu Rev Sociol 28:417–442
McGloin JM, Shermer LO (2009) Self-control and deviant peer structure. J Res Crime Delinq 46:35–72
Moffitt TE (1990) The neuropsychology of juvenile delinquency: a critical review of research and theory. In: Morris N, Tonry M (eds) Crime and justice: an annual review of research, vol 12. University of Chicago Press, Chicago
Morgan AB, Lilienfeld SO (2000) A meta-analytic review of the relation between antisocial behavior and neuropsychological measures of executive function. Clin Psychol Rev 20:113–136
Nagin DS (2007) Moving choice to center stage in criminological research and theory. Criminology 45:259–272
Nagin DS, Paternoster R (1994) Personal capital and social control: the deterrence implications of a theory of individual differences in offending. Criminology 32:581–606
Paternoster R, Saltzman LE, Waldo GP, Chiricos TG (1983) Estimating perceptual stability and deterrent effects: the role of perceived legal punishment in the inhibition of criminal involvement. J Crim Law Criminol 74:270–297
Piquero AR, Bouffard JA (2007) Something old, something new: a preliminary investigation of Hirschi's redefined self-control. Just Q 24:1–27
Piquero AR, Moffitt TE (2005) Explaining the facts of crime: how the developmental taxonomy replies to Farrington's invitation. In: Farrington DP (ed) Integrated developmental and life-course theories of offending. Transaction Books, New Brunswick, NJ, pp 51–72
Plous S (1993) The psychology of judgment and decision making. McGraw-Hill, New York
Pogarsky G, Piquero A (2003) Can punishment encourage offending? Investigating the "resetting effect". J Res Crime Delinq 40:92–117
Pogarsky G, Piquero AR, Paternoster R (2004) Modeling change in perceptions about sanction threats: the neglected linkage in deterrence theory. J Quant Criminol 20:343–369
Pratt T, Francis Cullen F (2000) The empirical status of Gottfredson and Hirschi's general theory of crime: a meta-analysis. Criminology 38:931–964
Ramsay JR, Rostain AL (2008) Cognitive behavioral therapy for adult ADHD: an integrative psychosocial and medical approach. Routledge, New York
Read D, Read NL (2004) Time discounting over the lifespan. Organ Behav Hum Decis Process 94:22–32
Rescher N (2003) Sensible decisions: issues of rational decisions in personal choice and public policy. Rowman & Littlefield Publishers, Lanham, MD
Shannahan MJ, Elder GH Jr (2002) History, agency and the life course. In: Dienstbier RA, Crockett LJ (eds) Agency, motivation, and the life course, vol 48. University of Nebraska Press, Lincoln, NE, pp 145–186
Simon H (1957) Models of man. Wiley, New York
Simon H (1984) Models of bounded rationality, volume 1: economic analysis and public policy. MIT Press, Cambridge, MA
Steinberg L (2005) Cognitive and affective development in adolescence. Trends Cogn Sci 9:69–74
Thaler RH, Sunstein CR (2008) Nudge: improving decisions and health, wealth, and happiness. Yale University Press, New Haven
Turner JH, Stets JE (2005) The sociology of emotions. Cambridge University Press, New York
Vohs KD, Baumeister RF, Loewenstein G (2007) Do emotions help or hurt decision making? Russell Sage Foundation, New York